UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/583,399	07/24/2007	Soon-Tae Ahn	SAMH100002000	8173

22891 7590 10/31/2011

LAW OFFICE OF DELIO & PETERSON, LLC.
121 WHITNEY AVENUE
NEW HAVEN, CT 06510

EXAMINER	
KESSLER, CHRISTOPHER S	
ART UNIT	PAPER NUMBER
1733	
MAIL DATE	DELIVERY MODE
10/31/2011	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

UNITED STATES PATENT AND TRADEMARK OFFICE

Commissioner for Patents
United States Patent and Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450
www.uspto.gov

BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/583,399
Filing Date: July 24, 2007
Appellant(s): AHN, SOON-TAE

Peter W Peterson
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 28 July 2011 appealing from the Office action mailed 11 March 2011.

(1) Real Party in Interest

The examiner has no comment on the statement, or lack of statement, identifying by name the real party in interest in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The following is a list of claims that are rejected and pending in the application: 1-6

(4) Status of Amendments After Final

The examiner has no comment on the appellant's statement of the status of amendments after final rejection contained in the brief.

(5) Summary of Claimed Subject Matter

The examiner has no comment on the summary of claimed subject matter contained in the brief.

(6) Grounds of Rejection to be Reviewed on Appeal

The examiner has no comment on the appellant's statement of the grounds of rejection to be reviewed on appeal. Every ground of rejection set forth in the Office action from which the appeal is taken (as modified by any advisory actions) is being maintained by the examiner except for the grounds of rejection (if any) listed under the

subheading "WITHDRAWN REJECTIONS." New grounds of rejection (if any) are provided under the subheading "NEW GROUNDS OF REJECTION."

(7) Claims Appendix

The examiner has no comment on the copy of the appealed claims contained in the Appendix to the appellant's brief.

(8) Evidence Relied Upon

20030066576	Ahn	4-2003

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 112

Claims 5 and 6 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Claim 5 and 6 require that the steel is induction heated without plastic deformation.

However, the claimed step of heating "without plastic deformation" is not described in the instant specification.

Claim Rejections - 35 USC § 103

Claims 1-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 2003/0066576 A1 (hereinafter "Ahn"). The examiner notes that Ahn is the pregrant publication corresponding to 6,752,880 cited by applicant.

Regarding the method claim 3, Ahn teaches the invention substantially as claimed. Ahn teaches a method of producing a steel wire for cold forging (see abstract, title, Summary of the Invention). Ahn teaches that he steel contains 0.21% C, 0.22% Si, 0.75% Mn, 0.012% P and 0.009% S (see [0040]), said range falling within the compositional range as claimed and establishing a prima facie case of obviousness for that range.

Ahn teaches heating the steel to temperature of 880-1300˚C by induction heating (see [0041]), the temperature range overlapping the claimed range and establishing a prima facie case of obviousness for that range. Ahn further teaches wherein the austenite grain size is made to be 5-90 μm (see [0041]), said range overlapping the range as claimed and establishing a prima facie case of obviousness for that range. It would have been obvious to one of ordinary skill in the art at time of invention to have selected a prior austenite grain size in the range as claimed because Ahn teaches the same utility over an overlapping range. Applicant is further directed to MPEP 2144.05.

Ahn teaches that the steel is rapidly cooled (quenched) and tempered (see [0041]). Ahn teaches that in the tempering, the steel is heated by induction heating for a time of 40 seconds to temperatures of 200-750˚C (see [0041]). Thus, the range of P value taught by Ahn overlaps the claimed range, establishing a prima facie case of obviousness. It would have been obvious to one of ordinary skill in the art to have

selected a value of T that would correspond to the claimed value of P, because Ahn teaches the same utility over the entire range disclosed.

Regarding the mechanical properties of the wire, Ahn is silent with regard to the impact absorption energy of the wire. Ahn teaches several examples falling within the tensile strength range and the austenite grain size range as claimed (see Tables 1 and 2). Thus the method with the overlapping parameters of austenite grain size, and tempering parameter would have made the claimed properties inherent in the steel, because the same material as claimed processed in the same way as claimed must have the same properties. Applicant is further directed to MPEP 2112.01.

Regarding claim 4, Ahn teaches that the steel further comprises 1.10% Cr (see [0040]), meeting the compositional limitation of the claim.

Regarding claims 5 and 6, Ahn does not teach that any plastic deformation takes place during the heating.

Regarding claims 1 and 2, Ahn teaches several examples falling within the tensile strength range and the austenite grain size range as claimed (see Tables 1 and 2). Thus the method with the overlapping parameters of austenite grain size, and tempering parameter would have made the claimed properties inherent in the steel, because the same material as claimed processed in the same way as claimed must have the same properties. Applicant is further directed to MPEP 2112.01.

(10) Response to Argument

Regarding the rejection under section 112, applicant argues that support for the term “without plastic deformation” in claims 5 and 6 is found in the specification, wherein no plastic deformation is described in connection with the induction heating. The examiner disagrees.

Firstly, the examiner notes the Appellant’s choice of claim language. Claim 5 as listed by Appellant on p. 12 of the appeal brief reads:

> 5. (previously presented) The method as set forth in claim 3, wherein the steel is induction heated without plastic deformation.

Thus, the induction heating step is limited in that the ***steel*** is without plastic deformation. However, Appellant's own specification shows at page 11-12 (the same portion cited by Appellant on p. 4 of the appeal brief) that the steel is in the form of a “hot rolled wire rod.” Hot rolling would be understood by one of ordinary skill in the art to necessarily include plastic deformation, and thereby in Appellant's own example, the steel is not “induction heated without plastic deformation” but is instead induction heated after being plastically deformed by hot rolling. Appellant’s own citation undermines Appellant's position rather than supporting it.

Appellant further argues at p. 5

> then subject to heating, quenching and tempering to achieve these properties. The specification does not state that the claimed heating method of the present invention, to an Ac3 transformation point or higher, is during hot rolling. The reference to "a hot rolled wire rod" in the Example is to the fact that the starting material had previously been hot rolled, and not that it was currently undergoing hot rolling while the described heating was taking place. Wire rod and other steel products that had originally been hot rolled are often subsequently described as such when they are used as the starting materials in other processes, such as the drawing that appellants describe in their Example. In the same way, appellant describes in the Example that he starts

However, the absence of hot rolling while the induction heating step takes place is not what is claimed. What is claimed is that in the steel is induction heated without plastic deformation. Appellant has chosen to limit the steel in the process step, rather than limiting the actions performed in the process step.

Appellant further argues that the induction heating step would "'cry out' for mention of plastic deformation if one were indeed employed." Once again, Appellant completely undermines their own position, by pointing out that the specification describes multiple points in the processing of the wire where plastic deformation may be employed (hot rolling, forging, etc). Indeed, the title of the application includes the term "for cold forging" in it. If this one step specifically were to exclude plastic deformation, then why is that not literally recited? The examiner believes that the "without plastic deformation" limitation in claims 5 and 6 was not a part of Appellant's invention.

Regarding the rejection under section 103, Appellant argues that Ahn does not disclose the tempering parameter P as claimed in claim 3. Appellant's statement that

Ahn “does not disclose or suggest the tempering parameter P" (brief at p. 6 A.) is true only in the most literal sense. While the examiner agrees that Ahn does not teach the tempering parameter P, Ahn teaches ranges of time t and temperature T that would result in overlapping values of P. as was stated previously, Ahn specifically teaches tempering for a time of 40 seconds at temperatures in the range of 200-750 C (see [0041]). Calculating using the formula for P claimed in claim 3, the value of P for the process of Ahn would be in the range of approximately:

$$1.8*(200+273)*(14.44 + \log 40) - 1.8*(750+273)*(14.44 + \log 40)$$

Or, approximately 13658-29540, substantially overlapping the range claimed by applicant. Thus, Ahn implicitly teaches a range of P that overlaps the claimed range of 21,800 to 30,000.

Appellant further argues at p. 7,

> Ahn publication, which is also by the inventor. The Ahn publication seeks good cold forging properties for high strength quenched and tempered steel wires, but discloses a different process and parameter than the present invention, which process and parameter do not achieve the tensile strength and impact absorption energy as claimed by appellant in the instant application. Although the Ahn publication discloses a heating process and austenite grain size in a range partially overlapping that of the present invention, it does not disclose or suggest the tempering parameter P as disclosed and claimed by appellant. Moreover, the Ahn publication does not disclose

First, the examiner stated in the Office action of 5 October 2010 (p.4) that Ahn teaches examples of tempered steel wire with composition, austenite grain size and tensile strength falling in the ranges as claimed. See for example, [0040] and Table 1 of Ahn,

wherein steel wires 6, 7, 10,11 and 12 each have composition, tensile strength and austenite grain size overlapping the claimed ranges.

Ahn does not teach an example of a process including all of the quantitative requirements of the method of claim 3 (composition, austenite size, tensile strength, tempering parameter and impact absorption energy). However, Ahn teaches ranges of composition and austenite size overlapping the claimed range (cited above), Ahn teaches values of tempering time and temperature that would inherently result in an overlapping range of tempering parameter P, and Ahn also teaches specific examples of steel wire having austenite grain size, composition and tensile strength in the ranges as claimed (though does not specify what tempering conditions were used). Thus, the impact absorption energy at -40 C, which is not mentioned at all in Ahn, would have been an inherent property in the steel wire made by the process made obvious by the teachings of Ahn, because Ahn makes obvious the process having overlapping composition, tempering parameter, tensile strength and austenite grain size.

Appellant argues that the combination of the various parameters offers the "unexpected advantage of high tensile strength and impact absorption energy to permit excellent cold forging of the steel wire" (brief at p. 7). Appellant further argues at p. 8 that the data in the specification show that the claimed parameters are critical. However, Appellant has not shown that the claimed method offers unexpectedly better results than the prior art. This is discussed already in the Office action of 11 March 2011 at pp. 4-5. Ahn attempts to solve the problem of providing a steel wire with excellent cold forging properties (see Title, claim 1, Summary, etc.)

The data provided are not commensurate in scope with the prior art, which requires a specific value of (n x YS). The (n x YS) requirement of the prior art is acknowledged by Appellant at p. 6 of the appeal brief. Appellant has not shown what are the (n x YS) values for the comparison data, nor made any attempt to explain the difference between the comparison data and the prior art.

The data provided are also not commensurate in scope with what is claimed (see prior Office action cited above).

Appellant argues that "the Ahn publication relies solely on the parameter n x YS to determine suitability for cold forging" (brief at p. 9). However, Ahn requires a number of other parameters such as a quenched and tempered structure (see claim 1), And explicitly teaches other parameters of the manufacturing process such as tempering time and temperature and austenite grain size which establish a prima facie case of obviousness for claim 3 (as stated above).

Regarding claims 1-2, Appellant argues that the combination of austenitic grain size, impact absorption energy and tensile strength achieves unexpected advantages over the prior art (brief at p. 10). However, as stated above, Ahn teaches ranges of composition and austenite size overlapping the claimed range (cited above), Ahn teaches values of tempering time and temperature that would inherently result in an overlapping range of tempering parameter P, and Ahn also teaches specific examples of steel wire having austenite grain size, composition and tensile strength in the ranges as claimed (though does not specify what tempering conditions were used). Thus, the impact absorption energy at -40 C, which is not mentioned at all in Ahn, would have

been an inherent property in the steel wire made obvious by the teachings of Ahn, having overlapping composition, tempering parameter, tensile strength and austenite grain size. Appellant has not demonstrated unexpected properties, as discussed previously.

Regarding the declaration of Soon-Tae Ahn filed on 15 March 2010 (Evidence Appendix), this evidence is specifically directed to the Kanisawa reference, which is not relied upon by the examiner. No reference to this appendix is made by Appellant in the brief. Thus this evidence is not considered to be relevant in the instant case.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/Christopher Kessler/

Examiner, Art Unit 1733

Conferees:

/ Roy King/

Supervisory Patent Examiner, Art Unit 1733

/ROBERT J. WARDEN, Sr./

Supervisory Patent Examiner, Art Unit 1700